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10/564,615	01/12/2006	Dmitry Dmitrievich Genkin	06-1665	9480

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EXAMINER	
AEDER, SEAN E	

ART UNIT	PAPER NUMBER
1642	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,615	GENKIN ET AL.	
	Examiner	Art Unit	
	SEAN E. AEDER	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-22* is/are pending in the application.

4a) Of the above claim(s) *6-10,12-18,21 and 22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 2* is/are rejected.

7)☒ Claim(s) *2-5,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/4/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Election/Restriction

Applicant's election with traverse of group I is acknowledged. The traversal is on the ground(s) that the inventions have not been shown to be independent and the examination of all groups would not impose a serious burden on the examiner. Applicants further point to MPEP 808.01, MPEP 808.02, and MPEP 802.01. These arguments have been considered but are not found persuasive as such arguments do not apply when restriction is required under 35 USC 121 and 372, as in the instantly filed application. Thus, when the Office considers international applications as an International Searching Authority, as an International Preliminary Examining Authority, and during the national stage as a Designated or Elected Office under 35 U.S.C. 371, PCT Rule 13.1 and 13.2 will be followed when considering unity of invention of claims of different categories without regard to the practice in national applications filed under 35 U.S.C. 111.

The inventions listed as groups I-VIII in the Restriction Requirement of 4/10/08 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. The technical feature linking groups I-VIII appears to be that they all relate to the special technical feature of a treatment method by acting on extracellular DNA inside organisms. However, Gocke et al (US 6,521,409; 2/18/03) teaches a treatment method by acting on extracellular DNA inside organisms in order to clarify when to initiate various therapies (see paragraph spanning columns 8 and 9, in particular). Therefore,

the technical feature linking the inventions of groups I-VIII does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art. Accordingly, groups I-VIII are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept. For these reasons, the restriction requirement is made Final.

Claims 1-10 and 12-22 are pending.

Claim 6-10, 12-18, 21, and 22 are withdrawn from further consideration by the examiner under 37 CFR 1.142(b) as being drawn to a non-elected invention.

Claims 1-5, 19, and 20 are currently under consideration.

Claim Objections

Claims 3-5, 19, and 20 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim 2 is objected to because of an apparent grammatical error. Claim 2 recites: "...binding or enzymatic modification of it's structure". The term "it's" is always the abbreviation of "it is" and the term "its" is the possessive of "it". It is suspected Applicant intended claim 2 to recite: "...binding or enzymatic modification of ~~it's~~ **its** structure". Proper correction is required.

Claim 2 is objected to because of an apparent typographical error. Claim 2 recites the term "extratcellular". It is suspected Applicant intended claim 2 to recite: "extracellular". Proper correction is required.

Claim Rejections - 35 USC § 112/101

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-2 are drawn to a treatment method, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it fails to recite any active, positive steps delimiting how the method is actually practiced. In the instant case, claim 2 states that the method "differs in that the extracellular DNA circulating in blood plasma is inactivated by destruction, binding or enzymatic modification of it's structure". The use of the phrase "differs in that" renders the claim indefinite because it is not clear if the limitation following this phrase is an active, method step.

Claims 1-2 are rejected under 35 U.S.C. 101 because the claimed recitation of a method, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under

35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-2 are rejected because claim 1 recites: "...or diabetes, or diseases caused by mutations in somatic cells' genes by acting on biological targets inside organisms". It is unclear *what* is "acting" on biological targets inside organisms. It is unclear: (1) whether a treatment is to be acting on biological targets inside organisms; (2) whether diseases are acting on biological targets inside organisms; or (3) whether mutations in somatic cells' genes are acting on biological targets inside organisms.

Claims 1-2 are rejected because claim 1 recites: "...by acting on biological targets inside organisms, differs in that the biological target is extracellular DNA...". It is unclear *what* is being compared when reciting that something "differs".

Claim 2 is rejected because claim 2 recites: "Treatment method according to claim 1 differs in that the extracellular…". It is unclear *what* is being compared when reciting that something "differs".

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating Erlich carcinoma in mice, Staphylococcus aureus infection in subjects, lung carcinoma in subjects, and somatic mosaicism in subjects comprising administering DNAse, **the specification does not reasonably provide enablement for** methods for treating all malignant tumors, all infections caused by bacteria, all diseases caused by fungi or protozoa, or artherosclerosis, or diabetes, or all diseases caused by mutations in somatic cells' genes by targeting extracellular DNA with any reagent. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required are summarized in *Ex parte* Forman, 230 USPQ 546 (BPAI 1986). They include the nature of the invention, the state of the prior art, the relative skill of those in the art, the amount of direction or guidance disclosed in the specification, the presence or absence of working examples, the predictability or unpredictability of the art, the

breadth of the claims, and the quantity of experimentation which would be required in order to practice the invention as claimed.

The instant claims are broadly drawn to methods for treating all malignant tumors, all infections caused by bacteria, all diseases caused by fungi or protozoa, or artherosclerosis, or diabetes, and all diseases caused by mutations in somatic cells' genes by targeting extracellular DNA with any reagent.

This invention is in a class of invention which the CAFC has characterized as "the unpredictable arts such as chemistry and biology". Mycogen Plant Sci., Inc. v. Monsanto Co., 243 F.3d 1316, 1330 (Fed. Cir. 2001).

Anker *et al.* (*Leukemia*, 2001, *15*, 289-91) teach that circulating DNA levels are higher in the blood of cancer patients than in healthy controls (page 289). However, the prior art does not teach that cancer can be treated by reducing circulating DNA levels.

The specification presents deoxyribonuclease (DNAse) as a reagent that could target extracellular DNA. This enzyme may be bovine pancreatic DNAse, human recombinant DNAse or other forms of DNAse known in the art. The specification presents working examples of three treatments: Erlich carcinoma in mice (examples 1-3); Staphylococcus aureus infection in mice (Example 5); lung cancer in mice (Example 14-16); and somatic mosaicism in humans (Example 18). In each case, the administration of DNase resulted in a therapeutic effect. However, the specification fails to provide working examples from any additional diseases with any additional reagents encompassed by the claims.

The extent of guidance and working examples presented in the specification is insufficient to enable the full scope of the claims. The skilled artisan would be burdened with testing all agents known to target extracellular DNA for their ability to treat a wide range of ailments. The experimentation required represents years of inventive effort. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

Further, therapeutic treatments, in general, are unpredictable, as underscored by Gura (Science, 1997, 278:1041-1042.) who discusses the potential shortcoming of potential anti-cancer agents including extrapolating from in-vitro to in-vivo protocols, the problems of drug testing in knockout mice, and problems associated with cologenic assays. Indeed, since formal screening began in 1955, thousands of drugs have shown activity in either cell or animal models, but only 39 that are used exclusively for chemotherapy, as opposed to supportive care, have won approval from the FDA (page 1041 first column, in particular) wherein the fundamental problem in drug discovery for cancer is that the model systems are not predictive.

One cannot extrapolate the teachings of the specification to the scope of the claims because the claims are broadly drawn to methods for treating all malignant tumors, all infections caused by bacteria, all diseases caused by fungi or protozoa, or artherosclerosis, or diabetes, and all diseases caused by mutations in somatic cells' genes by targeting extracellular DNA with any reagent, and Applicant has not enabled said methods because it has not been shown that targeting extracellular DNA with just any reagent gives rise to therapeutic responses for all malignant tumors, all infections

caused by bacteria, all diseases caused by fungi or protozoa, or artherosclerosis, or diabetes, and all diseases caused by mutations in somatic cells' genes.

In view of the teachings above and the lack of guidance, workable examples and or exemplification in the specification, it would require undue experimentation by one of skill in the art to determine with any predictability, that the method would function as claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ngan et al (Ann. NY Acad. Sci., 2001, 945:73-79).

Ngan et al teaches a method comprising administering cisplatin to patients suffering from nasopharyngeal cancer (pages 74-75, in particular). Said patients include those with both distant metastasis and local relapse (page 75, in particular). The administration of cisplatin resulted in a reduction of free Epstein-Barr virus DNA circulating in the patient's plasma and complete or partial remission in 76% of patients (page 75, in particular). Thus, cisplatin was administered in an amount to sufficiently target and destroy extracellular DNA circulating in blood plasma in these patients and treat local relapse tumors.

Claims 1-2 are rejected under 35 U.S.C. 102 (b) as being anticipated by Sugihara et al (Br J Cancer, 1993, 67(1): 66-70).

Sugihara et al teaches a method comprising administering DNase I to subjects with malignant tumors, wherein extracellular DNA circulating in the blood plasma would be destroyed (see abstract, in particular).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 6-14 of copending Application No. 10/564861. Although the conflicting claims are not identical, they are

not patentably distinct from each other because claims 1-4 and 6-14 of copending Application No. 10/564861 are species of instant claims 1-2.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of copending Application No. 10/564609. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-4 of copending Application No. 10/564609 are species of instant claims 1-2.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Summary

No claim is allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN E. AEDER whose telephone number is (571)272-8787. The examiner can normally be reached on M-F: 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sean E Aeder/
Examiner, Art Unit 1642